UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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July 1, 1999

Mr. Chris C. Oynes
Regional Director
Minerals Management Service
Gulf of Mexico OCS Region
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123

Dear Mr. Oynes:

The National Marine Fisheries Service (NMFS) has received the Minerals Management Service (MMS) letter of June 4, 1999, initiating Essential Fish Habitat (EFH) Programmatic Consultation for petroleum development activities in the Central and Western Gulf of Mexico. The EFH consultation request was made pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and its implementing regulations, and is the result of an effective cooperative effort by our staffs.

The Gulf of Mexico OCS Region's Programmatic Consultation request addresses pipeline rights-of-way, plans for exploration and production, and platform removal on the Federal Outer Continental Shelf (OCS). EFH consultation associated with NMFS review National Environmental Policy Act (NEPA) documents has not been addressed. Review of NEPA documents will be conducted independently of this Programmatic Consultation and require discussion and agreement between our staffs on the procedures to be used.

A description of OCS development activities, an analysis of their effects, your views on those effects, and proposed mitigation measures have been provided in the MMS-prepared EFH Assessment. While we have concerns about a portion of the discussion of oil spill impacts, with inclusion by reference of analyses in MMS environmental impact statements, the NMFS considers the EFH Assessment to be an acceptable evaluation of potential adverse impacts. Mitigation measures (environmental stipulations) proposed are those developed and implemented through an analytical process associated with past lease sales, MMS-funded research, and interagency consultation activities. The assessment meets the requirements of the EFH regulations at 50 CFR Subpart K, 600.920(g).

Your EFH Assessment and supporting documents, in combination with NMFS review of OCS exploration and production activities and impacts (attached), is the basis for our determination that a Programmatic Consultation provides an appropriate mechanism to evaluate EFH impacts of program activities. To ensure that adverse impacts to EFH and federally managed fisheries from activities managed by the Gulf of Mexico OCS Region are avoided, minimized, and offset, the implementation of EFH conservation measures is necessary. These measures include environmental stipulations and other mitigative measures

normally required by the MMS, additional conservation provisions, and project-specific consultation for pipeline alignment and routing in sensitive areas. Accordingly, for this Programmatic Consultation agreement, we recommend the following:

EFH Conservation Recommendations

MMS Proposed Mitigation Measures

1. Existing environmental stipulations for the protection of live bottoms, pinnacles, topographic features, and chemosynthetic communities, as identified in the EFH Assessment and the attachment to this letter, shall be incorporated in petroleum development approval documents prepared by the Gulf of Mexico OCS Region.

2. The Flower Garden Banks shall be deleted from areawide lease sales.

3. An oil spill response plan shall be required of all owners and operators of oil handling, storage, or transportation facilities located seaward of the coastline.

4. Pursuant to existing regulations, lessees shall be responsible for the control and removal of pollution to avoid risks to EFH and associated fisheries.

Additional EFH Conservation Recommendations

In addition to continuance of existing environmental stipulations and protective measures identified above, we also recommend the following:

5. When the Live Bottom (Pinnacle Trend) Stipulation is included in a pipeline laying permit, MMS shall require that: No bottom disturbing activities, including anchors from a pipeline laying barge, may be located within 100 feet of any pinnacle trend feature with vertical relief greater than or equal to 8 feet.

6. When the Topographic Features Stipulation is made a part of a permit that proposes to use a semi-submersible drilling platform, MMS shall require that: No bottom disturbing activities, including anchors or cables from a semi-submersible drilling platform, may occur within 500 feet of the No Activity Zone boundary.

7. When the Topographic Features Stipulation is made a part of a permit that proposes exploratory drilling operations, MMS shall require that: Exploratory operations that drill more than two wells from the same surface (surface of the seafloor) location at any one or continuous time and within the 3-Mile Restricted Activity Zone must meet the same requirements as a development operation (i.e., drilling discharges must be shunted to within 10 m of the seafloor).

8. When the Topographic Features Stipulation is required for any proposed permit around Stetson Bank, now a part of the Flower Gardens Banks National Marine Sanctuary(FGBNMS), the protective requirements of the East and West Flower Garden Banks shall be enforced.

9. Where there is documented damage to EFH under the Live Bottom (Pinnacle Trend) or Topographic Features lease stipulations, MMS shall coordinate with the NMFS Assistant Regional Administrator, Habitat Conservation Division, Southeast Region for advice. Based on the regulations at 30 CFR Subpart N, 250.200, "Remedies and Penalties," the Regional Director of the MMS may direct the preparation of a case file in the event that violation of a lease provision (including lease stipulations) causes serious, irreparable, or immediate harm or damage to life (including fish and other aquatic life) or the marine environment. The conduct of such a case could lead to corrective or mitigative actions.

10. MMS shall provide NMFS with yearly summaries describing the number and type of permits issued in the Western and Central Planning Areas, and permits for activities located in the Live Bottom (Pinnacle Trend) and Topographic Features blocks for that year. Also, the summaries shall include a report of any mitigation actions taken by MMS for that year in response to environmental damage to EFH.

Project-specific Consultation

There are Gulf of Mexico OCS Region program activities which cannot be addressed adequately by programmatic EFH conservation recommendations. Specifically, NMFS is concerned with possible failure of pipelines carrying liquid hydrocarbons and resultant destruction of critical reef and pinnacle trend EFH. Therefore, MMS shall initiate project-specific EFH consultations with NMFS whenever a proposed pipeline, intended to transport liquid hydrocarbons having an API gravity of 45° or less, would be located within 300 feet of any pinnacle trend formation or topographic feature which has 8 feet or more of vertical relief.

Through these individual consultations, NMFS and MMS shall address routing and alignment concerns related to the specified pipeline activities. MMS shall work with NMFS to develop a procedure for using the Topographic Features and Pinnacle Trend Features Stipulations process to accomplish these individual EFH consultations efficiently and effectively.

Review and Revision

If any changes are made to MMS programs and "Stipulations" described in the EFH Assessment, such that effects on EFH are potentially changed, MMS shall notify NMFS Southeast Region and the agencies will discuss whether this Programmatic Consultation should be revised. Should NMFS receive new or additional information that may affect EFH conservation recommendations, NMFS will consider whether to request additional consultation with MMS and/or provide additional EFH conservation recommendations. At intervals of not less than every five years following this consultation, NMFS Southeast Region will review these programmatic EFH conservation recommendations with MMS and determine whether they should be revised to account for any new information or new technology.

Conclusion

Based on our review of the EFH Assessment provided by your June 4, 1999, letter, we have determined that the MMS environmental stipulations, deletion of FGBNMS from areawide lease sales, requirements for spill contingency plans, and discharge and pollution regulations are appropriate EFH conservation

recommendations. NMFS directly adopts these measures as EFH conservation recommendations, and specifies six additional EFH conservation measures. Additionally, we have identified specific pipeline activities that require individual consultation. In combination these constitute NMFS EFH conservation recommendations provided pursuant to the Magnuson-Stevens Act.

As required by section 305(b) of the Magnuson-Stevens Act, MMS must respond in writing within 30 days of receiving these EFH conservation recommendations. MMS must include in their response the acceptability of the NMFS-recommended measures to avoid, minimize, and mitigate adverse impacts of OCS development activities on EFH. If MMS's response is inconsistent with NMFS EFH conservation recommendations, MMS must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the proposed actions and the measures needed to avoid, minimize, mitigate, or offset such effects.

If MMS adopts the NMFS EFH conservation recommendations, no further EFH consultation is required for actions covered by this Programmatic Consultation (except those special cases described in Project-Specific Consultation, where individual consultation has been specified). Future MMS OCS operations in the Gulf of Mexico Eastern Planning Area may be added to this programmatic agreement at a date to be determined appropriate by both agencies.

I appreciate the efforts of the Gulf of Mexico OCS Region to cooperatively identify and evaluate impacts to EFH from various operational activities. Should you have any questions on the information or recommendations contained herein, please contact Rickey N. Ruebsamen, my EFH Coordinator, at 727/570-5317.

Sincerely,

Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

Essential Fish Habitat (EFH) Programmatic Consultation between the National Marine Fisheries Service, Southeast Region and Minerals Management Service, Gulf of Mexico OCS Region

Purpose

Under Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Federal agencies are required to consult with the Secretary of Commerce on any action that may adversely affect Essential Fish Habitat (EFH). Consultation can be addressed programmatically to broadly consider as many adverse effects as possible through programmatic EFH conservation recommendations.

This programmatic consultation applies to pipeline rights-of-way, plans for exploration and production, and platform removal for oil and gas and pipeline operations in the Minerals Management Service (MMS) Outer Continental Shelf Lands Act (OCSLA) Central and Western Planning Areas of the Gulf of Mexico. This programmatic consultation does not encompass the bidding or granting of leases through lease sales by MMS.

Program Description

The OCSLA of 1953 (67 Stat. 462), as amended [43 U.S.C. 1331 et seq. (1988)], established Federal jurisdiction over submerged lands on the Outer Continental Shelf (OCS) seaward of state boundaries. Under the OCSLA, the Department of the Interior (DOI) is required to manage the leasing, exploration, development, and production of oil and gas resources on the Federal OCS. The Secretary of the Interior (Secretary) oversees the OCSLA oil and gas program and is required to balance orderly resource development with protection of the human, marine, and coastal environments while simultaneously ensuring that the public receives an equitable return for these resources and that free-market competition is maintained. The OCSLA empowers the Secretary to grant leases to the highest qualified responsible bidder(s) on the basis of sealed competitive bids and to formulate such regulations as necessary to carry out the provisions of the OCSLA. The Secretary has designated the MMS as the administrative agency responsible for the mineral leasing of submerged OCS lands and for the supervision of offshore operations after lease issuance.

In the Gulf of Mexico OCS, the MMS OCSLA program is evaluated through the National Environmental Policy Act components consisting of Draft and Final Environmental Impact Statements (EIS) for the Central and Western Planning Areas. The purpose of the EIS documents is to evaluate Federal actions for proposed lease areas that may contain economically recoverable oil and gas reserves. These EIS's analyze and discuss the potential impacts of the proposed actions on the marine, coastal, and human environments.

Oil and gas operations in the Gulf of Mexico are accomplished using structures placed or anchored on the OCS to facilitate hydrocarbon exploration, development, and production. Placement of these structures, including drilling ships (jack-ups, semi-submersibles, and drill ships), production platforms, and pipelines, disturbs the underlying seabottom. If anchors are deployed, the bottom habitat (immediately under the anchors and about one-third of the anchor chain) is directly impacted. Exploration rigs, platforms, and pipe laying barges use an array of eight 9,000-kg anchors and very heavy chain to both position a rig and barge, and to move a barge along the pipeline route. These anchors and chains are continually moved as a pipe laying operation proceeds. The area actually affected by anchors and chains depend on water depth, wind, currents, chain length, and the size of the anchor and chain.

Conventional, fixed multileg platforms, which are anchored into the seafloor by steel pilings, are used

predominately in water depths less than 400 m. During structure removal, explosives are used to sever conductors and pilings because of the strongly over-built condition of these structures that must withstand probable hurricane conditions over an average 20-year life span. Possible injury to biota from explosive use extends outward to 900 m from the detonation source and upwards to the surface.

Major operational wastes generated in the largest quantities by offshore oil and gas exploration and development include drilling fluids and cuttings, and produced waters. Other major wastes include the following: from drilling--waste chemicals, fracturing and acidifying fluids, and well completion and work over fluids: from production--produced sand, deck drainage, and miscellaneous well fluids (cement, BOP fluid); and from other sources--sanitary and domestic wastes, gas and oil processing wastes, ballast water, storage displacement water, and miscellaneous minor discharges.

Major contaminants or chemical properties of concern in oil and gas operational wastes can include high salinity, low pH, high biological and chemical oxygen demand, suspended solids, heavy metals, crude oil compounds, organic acids, priority pollutants, and radionuclides. Any and all of these contaminants and properties can lead to direct loss and/or harmful effects on managed species, including prey species, and the associated inshore, nearshore and offshore EFH.

The Magnuson-Stevens Fishery Conservation and Management Act

Gulf of Mexico Essential Fish Habitat (EFH) Amendment to Fishery Management Plans (FMP)
Section 303(a)(7) of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), requires that Fishery Management Councils include provisions in their fishery management plans that identify and describe EFH, including adverse impacts and conservation and enhancement measures. The EFH amendment (GMFMC, 1999) represents the Gulf of Mexico Fishery Management Council's (Gulf Council) response to those requirements by serving as a generic amendment to the following FMPs:

- Fishery Management Plan for the **Shrimp** Fishery of the Gulf of Mexico, United States Waters
- Fishery Management Plan for the **Red Drum** Fishery of the Gulf of Mexico
- Fishery Management Plan for the **Reef Fish** Fishery of the Gulf of Mexico
- Fishery Management Plan for the **Coastal Migratory Pelagic Resources (Mackerels)** in the Gulf of Mexico and South Atlantic.
- Fishery Management Plan for the **Stone Crab** Fishery of the Gulf of Mexico
- Fishery Management Plan for **Spiny Lobster** in the Gulf of Mexico and South Atlantic
- Fishery Management Plan for **Coral and Coral Reefs** of the Gulf of Mexico

This generic EFH document (GMFMC, 1999) amends the seven FMPs of the Gulf Council. EFH is identified and described based on areas where various life stages of 26 representative managed species and the coral complex commonly occur. The 26 representative species are shrimp (brown shrimp, *Farfantepenaeus aztecus;* white shrimp, *Litopenaeus setiferus;* pink shrimp, *Farfantepenaeus duorarum;* and royal red shrimp, *Pleoticus robustus*; red drum, *Sciaenops ocellatus;* reef fish (red grouper, *Epinephelus morio*; gag grouper, *Mycteroperca microlepis;* scamp grouper, *Mycteroperca phenax*; black grouper, *Mycteroperca bonaci*; red snapper, *Lutjanus campechanus;* vermilion snapper, *Rhomboplites aurorubens*; gray snapper, *Lutjanus griseus;* yellowtail snapper, *Ocyurus chrysurus;* lane snapper, *Lutjanus synagris*; greater amberjack, *Seriola dumerili;* lesser amberjack, *Seriola fasciata;* tilefish, *Lopholatilus chamaeleonticeps;* and gray triggerfish, *Balistes capriscus*), coastal migratory pelagic species (king mackerel, *Scomberomorus cavalla;* Spanish

mackerel, *Scomberomorus maculatus;* cobia, *Rachycentron canadum;* dolphin, *Coryphaena hippurus;* bluefish, *Pomatomus saltatrix;* and little tunny, *Euthynnus alleteratus*), stone crab, *Menippe mercenaria;* spiny lobster, *Panulirus argus;* and the coral complex.

Two other Secretarial Fishery Management Plans are effective in the Gulf of Mexico; The Highly Migratory Species (Tunas, Sharks, and Swordfish) FMP and The Billfish FMP. EFH described and identified in the generic amendment of the Gulf Council's FMPs (GMFMC 1999) encompasses those areas, within the Gulf of Mexico region, described as EFH in the Secretarial FMPs.

List of species by Fishery Management Council (FMP) and Secretarial FMP:

FMP for the Shrimp Fishery of the Gulf of Mexico

Brown shrimp, *Farfantepenaeus aztecus*
Pink shrimp, *F. duorarum*
Rock shrimp, *Sicyonia brevirostris*
Royal red shrimp, *Pleoticus robustus*
Seabob shrimp, *Xiphopenaeus kroyeri*
White shrimp, *Litopenaeus setiferus*

FMP for the Red Drum Fishery of the Gulf of Mexico

Redfish, *Sciaenops ocellatus*

FMP for the Reef Fish Fishery of the Gulf of Mexico

Snappers - Lutjanidae
- Queen, *Etelis oculatus*
- Mutton, *Lutjanus analis*
- Schoolmaster, *L. apodus*
- Blackfin, *L. buccanella*
- Red, *L. campechianus*
- Cubera, *L. cyanopterus*
- Gray (mangrove), *L. griseus*
- Dog, *L. jocu*
- Mahogany, *L. mahogoni*
- Lane, *L. synagris*
- Silk, *L. vivanus*
- Yellowtail, *Ocyurus chrysurus*
- Wenchman, *Pristipomoides aquilonaris*
- Vermilion, *Rhomboplites aurorubens*

Groupers - Serranidae
- Speckled hind, *E. drummondhayi*
- Yellowedge grouper, *E. flavolimbatus*
- Red hind, *E. guttatus*
- Jewfish, *E. itajara*
- Red grouper, *E. morio*
- Misty grouper, *E. mystacinus*
- Warsaw grouper, *E. nigritus*
- Snowy grouper, *E. niveatus*
- Nassau grouper, *E. striatus*
- Black grouper, *Mycteroperca bonaci*
- Yellowmouth grouper, *M. interstitialis*
- Gag, *M. microlepis*
- Scamp, *M. phenax*
- Yellowfin grouper, *M. venenosa*

Sea Basses - Serranidae
- Bank, *Centropristis ocyurus*
- Rock, *C. philadelphica*
- Black, *C. striata*

Tilefishes - Malacanthidae
- Goldface, *Caulolatilus chrysops*
- Blackline, *C. cyanops*
- Anchor, *C. intermedius*
- Blueline, *C. microps*
- Tilefish, *Lopholatilus chamaeleonticeps*

Jacks - Carangidae
- Greater amberjack, *Seriola dumerili*
- Lesser amberjack, *S. fasciata*
- Almaco jack, *S. rivoliana*
- Banded rudderfish, *S. zonata*

Grunts - Haemulidae
- White grunt, *Haemulon plumieri*

Porgies - Sparidae
- Red porgy, *Pagrus pagrus*

Triggerfishes - Balistidae

Gray triggerfish, *Balistes capriscus*

FMP for the Coastal Migratory Pelagic Resources (Mackerels) of the Gulf of Mexico and South Atlantic
King mackerel, *Scomberomorus cavalla*
Spanish mackerel, *S. maculatus*
Cero, *S. regalis*
Cobia, *Rachycentron canadum*
Little tunny, *Euthynnus alletteratus*
Dolphin, *Coryphaena hippurus*
Bluefish, *Pomatomus saltatrix*

FMP for the Stone Crab Fishery of the Gulf of Mexico
Stone crab, *Menippe mercenaria*
M. adina
M. adina X.M. mercenaria (hybrid)

FMP for the Spiny Lobster Fishery of the Gulf of Mexico and South Atlantic
Spiny lobster, *Panulirus argus*
Slipper (Spanish) lobster, *Scyllarides nodifer*

FMP for the Coral and Coral Reefs of the Gulf of Mexico
Class Hydrozoa -fire corals and hydrocorals
Class Anthozoa
Subclass Octocorallia - octocorals
Subclass Ceriantipatharia
Order Antipatharia - black corals
Subclass Hexacorallia
Orders Scleractinia - stony corals

Secretarial FMP for Atlantic Billfish
Atlantic Blue marlin, *Makaira nigricans*
Atlantic White marlin, *Tetrapturus albidus*
Atlantic Longbill spearfish, *T. pfluegeri*
Atlantic sailfish, *Istiophorus platypterus*

Secretarial FMP for Tunas, Sharks and Swordfish
Swordfish, *Xiphias gladius*

Tunas
Atlantic Bluefin, *Thunnus thynnus*
Atlantic Yellowfin, *T. albacares*
Atlantic Skipjack, *Katsuwonus pelamis*

Sharks
Atlantic sharpnose, *Rhizoprionodon terranovae*
Caribbean sharpnose, *R. porosus*
Bigeye sand tiger, *Odontaspis noronhal*
Bigeye sixgill, *Hexanchus vitulus*
Sixgill, *H. griseus*
Sharpnose sevengill, *Heptranchias perlo*
Blacknose, *Carcharhinus acronotus*
Blacktip, *C. limbatus*
Bull, *C. leucas*
Dusky, *C. obscurus*
Finetooth, *C. isodon*
Sandbar, *C. plumbeus*
Silky, *C. falciformis*
Smalltail, *C. porosus*
Spinner, *C. brevipinna*
Caribbean reef, *C. perez*
Narrowtooth, *C. brachyurus*
Lemon, *Negaprion brevirostris*
Bonnethead, *Sphyrna tiburo*
White, *Carcharodon carcharias*
Great hammerhead, *Sphyrna mokarran*
Scalloped hammerhead, *S. lewini*
Smooth hammerhead, *S. zygaena*
Longfin mako, *Isurus paucus*
Nurse, *Ginglymostoma cirratum*
Tiger, *Galeocerdo cuvieri*
Whale, *Rhincodon typus*

Gulf Council Policy
Information presented in the EFH generic amendment (GMFMC, 1999) is consistent with and supports the Gulf Council's long-standing habitat policy. The policy, as set forth in the Council's Statement of Organization Practices and Procedures, states:

Recognizing that all species are dependent on the quantity and quality of their essential habitats, it is the policy of the Gulf of Mexico Fishery Management Council to:

Protect, restore and improve habitats upon which commercial and recreational marine fisheries depend, to increase their extent and to improve their productive capacity for the benefit of present and future generations. (For purposes of this policy, habitat is defined to include all those things physical, chemical and biological that are necessary to the productivity of the species being managed).

This policy shall be supported by three policy objectives which are to:

a. Maintain the current quantity and productive capacity of habitats supporting important commercial and recreational fisheries, including their base. (This objective may be accomplished through the recommendation of no loss and minimization of environmental degradation of existing habitat).

b. Restore and rehabilitate the productive capacity of habitats which have already been degraded.

c. Create and develop productive habitats where increased fishery productivity will benefit society.

The Council shall assume an aggressive role in the protection and enhancement of habitats important to marine and anadromous fish. It shall actively enter federal decision-making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the Council.

The fish and shellfish under management of the Gulf Council are valuable and renewable natural resources. These resources contribute to the food supply, economy, and health of the nation and provide recreational opportunities. Commercial and recreational fishing are a major source of employment and contribute significantly to the economy of the Gulf states and to the nation. Certain stocks of fish (e.g., king mackerel, red snapper, red drum) have been reduced in number because of fishing pressure and/or habitat losses that have resulted in a diminished capacity to support existing fishing levels. To rebuild these diminished stocks the Gulf Council has implemented measures to reduce fishing mortality (i.e., quotas, bag limits, closed area/seasons, etc.) and is actively involved in protecting habitat. The Gulf of Mexico, therefore, is an integral part of a national program of conservation and management that is necessary to realize the full potential of the Nation's fishery resources.

Types of EFH Affected by Program Activities

EFH is described and identified as everywhere that the above managed species commonly occur. The EFH determination is based on species distribution maps and habitat association tables presented in Section 5 of the Amendment (GMFMC, 1999). In estuaries, the EFH of each species consists of those areas depicted in the maps as "common", "abundant" and "highly abundant." In offshore areas, EFH consists of those areas depicted as "adult areas," "spawning areas" and "nursery areas." Because these species collectively occur in all estuarine and marine habitats of the Gulf of Mexico, EFH is separated into estuarine and marine components. For the estuarine component, EFH is described and identified as all estuarine waters and substrates (mud, sand, shell, rock and associated biological communities), including the sub-tidal vegetation (seagrasses and algae) and adjacent inter-tidal vegetation (marshes and mangroves). In marine waters of the Gulf of Mexico, EFH is described and identified as all marine waters and substrates (mud, sand, shell, rock, hardbottom, and associated biological communities) from the shoreline to the seaward limit of the EEZ.

NMFS has determined that the following discussions of coastal and marine habitats [topographic features and live bottoms (pinnacle trend)], excerpted from the MMS (1997, 1998), compliment the EFH description of the Gulf Council (GMFMC,1999). EFH not described in this section (e.g., low-relief mud bottoms) would not be adversely impacted by activities subject to this consultation.

A. Biological Resources (from MMS, 1998, pages III-21, 22)
1. Sensitive Coastal Environments

Sensitive coastal environments include coastal barrier beaches and associated dunes and wetlands. Activities affecting or conducted in these areas will be assessed through MMS National Environmental Policy Act procedures and through consultation with other agencies which have appropriate jurisdiction.

2. Sensitive Offshore Resources

Sensitive offshore resources refers to both water-column and seafloor biological resources. Seafloor (benthic) habitats, including live-bottom areas, topographic features and coral reefs are at risk of being adversely affected by offshore oil and gas and pipeline laying operations.

The pelagic offshore water-column biota contains primary producers (phytoplankton and bacteria--90 percent of the phytoplankton in the northern Gulf of Mexico is constituted by diatoms), secondary producers (zooplankton), and consumers (larger marine species including fish, reptiles, cephalopods, crustaceans, and marine mammals). The zooplankton consists of holoplankton (organisms for which all life stages are spent in the water column, including protozoans, gelatinous zooplankton, copepods, chaetognaths, polychaetes, and euphausids) and meroplankton (mostly invertebrates and vertebrate organisms for which larval stages are spent in the water column, including polychaetes, echinoderms, gastropods, bivalves, and fish larvae and eggs). Planktonic primary producers drift with currents, whereas zooplankters move by swimming. The species diversity, standing crop, and primary productivity of offshore phytoplankton are known to fluctuate much less than their coastal counterparts as the offshore phytoplankton are less subject to changes of salinity, nutrient availability, vertical mixing, and zooplankton predation. In general, the diversity of pelagic planktonic species generally decreases with decreased salinity, and biomass decreases with distance from shore. The geographical and vertical ranges of plankters and consumers are limited by temperature, salinity, and nutrient availability. The fish species of the Gulf are temperate, with incursions of subtropical Caribbean faunas. Gulf fish species exhibit seasonal distribution and abundance fluctuations that are related to oceanographic conditions.

Another essential component of the offshore environment is the neuston, which is composed of organisms living at the air-seawater interface. Significant components of the neuston are copepods, floating *Sargassum* algae (also known as "*Sargassum* rafts"), and the organisms associated with the *Sargassum*. As many as 100 different animal species can be found in the floating *Sargassum* in the Gulf. These species include mostly hydroids and copepods, but also contain fish, crabs, gastropods, polychaetes, bryozoans, anemones, and sea-spiders. The majority of these organisms depend on the presence of the *Sargassum* algae. *Sargassum* rafts potentially constitute long-term havens for young sea turtles, which drift with these floating ecosystems as they feed off their living organisms, possibly for several years.

Continental Shelf

Shelf phyto- and zooplankton are more abundant, more productive, and seasonally more variable than the deep Gulf plankton. This is related to salinity changes, greater nutrient availability, increased vertical mixing, and

different zooplankton predation on the shelf environment. The benthos of the shelf has both floral and faunal components; floral representatives include bacteria, algae, and seagrasses.

Benthic fauna include infauna (animals that live in the substrate, including mostly burrowing worms, crustaceans, and mollusks) and epifauna (animals that live on or are attached to the substrate; mostly crustaceans, as well as echinoderms, mollusks, hydroids, sponges, and soft and hard corals. Shrimp and demersal fish are closely associated with the benthic community. Substrate is the single most important factor in the distribution of benthic fauna. In general, the vast majority of bottom substrate available to benthic communities in the Western and Central Gulf consists of soft, muddy bottoms with the benthos being dominated by polychaetes. Topographic features are the benthic habitats on the continental shelf at most risk to potential impacts from oil and gas operations.

Continental Slope and Deep Sea

The continental slope is a transitional environment influenced by processes of both the shelf and the abyssal Gulf (>975 m). This transitional character applies to both the pelagic and the benthic realms. The deep-sea area (>800 m) of the northern Gulf of Mexico is much less known that the shelf (<150 m).

a. Live Bottoms (Pinnacle Trend) (from MMS, 1997, pages III-25, 26)

The northeastern portion of the Central Gulf of Mexico exhibits a region of topographic relief, known as the "pinnacle trend," at the outer edge of the Mississippi-Alabama shelf between the Mississippi River and DeSoto Canyon. The pinnacles appear to be carbonate reefal structures in an intermediate stage between growth and fossilization (Ludwick and Walton, 1957). The region contains a variety of features from low-relief rocky areas to major pinnacles, as well as ridges, scarps, and relict patch reefs. The heavily indurated pinnacles provide a surprising amount of surface area for the growth of sessile invertebrates and attract large numbers of fish. Additional hard-bottom features are located nearby on the continental shelf, outside the actual pinnacle trend areas.

The features of the pinnacle trend offer a combination of topographic relief, occasionally in excess of 20 m, and hard substrate for the attachment of sessile organisms and, therefore, have a greater potential to support significant live-bottom communities than surrounding areas on the Mississippi-Alabama Shelf. Features of high topography show rich assemblages of bottom dwelling organisms consisting of sponges, gorgonian corals (especially sea fans), crinoids, and bryozoans, with coralline algae also in abundance on flat-topped reefs at the depths of 62-63 m. Other organisms on reef flats include holothurians, basket stars, and myriads of fish. On reefs lacking this flat reef habitat, as well as on reef faces on flat-topped features, the benthic community is characterized by a high relative abundance of ahermatypic corals (both solitary and colonial scleractinians). Other frequently observed organisms on these rugged, often vertical reef faces include crinoids, gorgonians, sea urchins, and basket stars. Summits of these features are often occupied by dense schools of *Rhomboplites aurorubens* (vermilion snapper), *Holanthias martinicensis* (roughtongue bass), *Hemanthias aureorubens* (streamer bass), and *Paranthias furcifer* (creole-fish).

b. Topographic Features (from MMS, 1998, pages III-26 through 31; 1997, pages III-30 through 37)

The shelf and shelf edge of the Western and Central Gulf are characterized by topographic features that are inhabited by hard-bottom benthic communities. The habitat created by the topographic features is important in several respects: they support hard-bottom communities of high biomass, high diversity, and high numbers

of plant and animal species; they support, either as shelter or food, or both, large numbers of commercially and recreationally important fishes; they are unique to the extent that they are small, isolated areas of such communities in vast areas of much lower diversity; they provide a relatively pristine area suitable for scientific research (especially the East and West Flower Garden Banks); and they have an aesthetically attractive intrinsic value.

In the Western Gulf, 23 topographic features are located in three shelf zones:

Shelf-Edge Banks
East Flower Garden Bank, West Flower Garden Bank, Geyer Bank, Rankin Bank, Elvers Bank, MacNeil Bank, Appelbaum Bank.

South Texas Banks
Big Dunn Bar, Small Dunn Bar, Blackfish Ridge, Mysterious Bank, Baker Bank, Aransas Bank, Southern Bank, North Hospital Bank, Hospital Bank, South Baker Bank, Dream Bank.

Midshelf Banks
Claypile Lump, 32 Fathom Bank, Coffee Lump, Stetson Bank, 29 Fathom Bank.

In the Central Gulf, 16 topographic features are located in two shelf zones:

Shelf-Edge Banks
Bright Bank, McGrail Bank, Rankin Bank, Alderdice Bank, Rezak Bank, Sidner Bank, Ewing Bank, Jakkula Bank, Bouma Bank, Parker Bank, Sackett Bank, Diaphus Bank, Sweet Bank.

Midshelf Banks
Sonnier Bank, 29 Fathom Bank, Fishnet Bank.

(Rankin and 29 Fathom Banks are located along the dividing line between the Central and Western Gulf and, therefore, are considered for both).

Assessment of Effects on EFH

The NMFS has determined that the MMS request for Programmatic Consultation, the associated EFH assessment, and habitat descriptions and impact assessments of the MMS (1997, 1998) fulfill the regulatory requirement for an EFH assessment [50 CFR Section 600.920(g)]. NMFS has also determined that the MMS assessments of effects on EFH [topographic features and live bottoms (pinnacle trend)] compliments information in the Gulf Council's generic amendment of the FMPs (GMFMC 1999). EFH not specifically assessed in this section (e.g., low relief mud bottoms) would not be adversely impacted by activities subject to this consultation.

a. Live Bottoms (Pinnacle Trend)

Seventy (70) blocks are within the Central Gulf region defined as the pinnacle trend, which contains live bottoms that are sensitive to oil and gas activities. A number of OCS-related factors may cause adverse impacts on the pinnacle trend communities and features. Damage caused by oil spills (platforms and pipelines), blowouts (platforms and pipelines), anchoring (semi-submersible drilling rigs and pipeline laying barges),

structure placement, structure removal (explosive use and abandoned bottom debris), pipeline emplacement, drilling discharges (muds and cuttings), produced-water discharges, and the disposal of domestic and sanitary wastes can cause the immediate mortality of live-bottom organisms or the alteration of sediments to the point that recolonization of the affected areas may be delayed or impossible.

A complete description of each of these OCS-related factors impact on the pinnacle trend areas is found at MMS (1997), pages IV-101 and 102 and is not repeated here.

b. Topographic Features

Three hundred eighty (380) blocks within the Central and Western Gulf regions have topographic features and restricted activity zones. The potential impact from OCS impact-producing factors on the topographic features of the Western and Central Gulf are anchoring (semi-submersible drilling rigs and pipeline laying barges), structure placement, drilling discharges (muds and cuttings), produced-water discharges, oil spills (platforms and pipelines), blowouts (platforms and pipelines), and structure removal (explosive use and abandoned bottom debris). These disturbances have the potential to disrupt and alter the environmental, commercial, recreational, and aesthetic values of topographic features.

A complete description of each of these OCS impact-producing factors impact on the topographic features of the Western and Central Gulf regions is found at MMS (1998), pages IV-98 through 102 and is not repeated here.

MMS Environmental Stipulations

MMS has developed measures to mitigate possible impacts of OCS activities on environmental resources and non-OCS activities. These measures are called "Stipulations" and are specific to live bottoms (pinnacle trend) and topographic features (reefs and banks) and have been applied (with review and revision from NMFS) to these OCS areas for nearly 20 years. The NMFS finds that these measures are protective of EFH. Lease stipulations which are normally specified in OCS leases are:

1. Live Bottom (Pinnacle Trend) Stipulation

In the Central Region only, the Live Bottom (Pinnacle Trend) Stipulation is intended to protect the pinnacle trend and the associated hard-bottom communities from damage and, at the same time, provide for recovery of potential oil and gas resources (MMS, 1997).

The MMS Stipulation reads as follows:

Live Bottom (Pinnacle Trend) Stipulation

(To be included only on leases in the following blocks: Main Pass Area, South and East Addition Blocks 190, 194, 198, 219-226, 276-290, Viosca Knoll Area Blocks 473-476, 521, 522, 564, 565, 566, 609, 610, 654, 692-698, 734, 778.)

For the purpose of this stipulation, "live bottom areas" are defined as seagrass communities; or those areas which contain biological assemblages consisting of such sessile invertebrates as sea fans, sea whips, hydroids,

anemones, ascidians, sponges, bryozoans, or corals living upon and attached to naturally occurring hard or rocky formations with rough, broken, or smooth topography; or areas whose lithotope favors the accumulation of turtles, fishes, and other fauna.

Prior to any drilling or pipeline activities or the construction or placement of any structure for exploration or development on this lease, including, but not limited to, anchoring, well drilling, and pipeline and platform placement, the lessee will submit to the Regional Director (RD) a live bottom survey report containing a bathymetry map prepared utilizing remote sensing techniques. The bathymetry map shall be prepared for the purpose of determining the presence or absence of live bottoms which could be impacted by the proposed activity. This map shall encompass such an area of the seafloor where surface disturbing activities, including anchoring, may occur.

If it is determined that the live bottoms might be adversely impacted by the proposed activity, the RD will require the lessee to undertake any measure deemed environmentally, economically, and technically feasible to protect the pinnacle area. These measures may include, but are not limited to, the following:

(a) the relocation of operations; and
(b) the monitoring to assess the impact of the activity on the live bottoms.

2. Topographic Features Stipulation

The topographic features of the Western and Central Gulf Regions provide habitat for coral reef community organisms. These communities could be severely and adversely impacted by oil and gas activities resulting from the proposed actions if such activities took place on or near these communities without the Topographic Features Stipulation and if such activities were not mitigated. The DOI has recognized this problem for some years, and since 1973 stipulations have been made a part of leases on or near these biotic communities so that impacts from nearby oil and gas activities were mitigated to the greatest extent possible. This stipulation would not prevent the recovery of oil and gas resources, but would serve to protect valuable and sensitive biological resources.

The Topographic Features Stipulation was formulated based on consultation with NMFS and other Federal agencies and comments solicited from the States, industry, environmental organizations, and academic representatives. The stipulation is based on years of scientific information collected since the inception of the stipulation. This information includes various Bureau of Land Management/MMS-funded studies on the topographic highs in the Western and Central Gulf; numerous stipulation-imposed, industry-funded monitoring reports; and the National Research Council report entitled *Drilling Discharges in the Marine Environment* (NRC, 1983).

The requirements in the stipulation are based on the following facts:

(a) Shunting of the drilling effluent to the nepheloid layer confines the effluent to a level deeper than that of the living reef of a high-relief topographic feature. Shunting is therefore an effective measure for protecting the biota of high-relief topographic features (Bright and Rezak, 1978; Rezak and Bright, 1981; NRC, 1983).

(b) The biological effect on the benthos from the deposition of nonshunted discharge is mostly limited to within 1,000 m of the discharge (NRC, 1983).

(c) The biota of topographic features can be categorized into depth-related zones defined by degree of reef-building activity (Rezak and Bright, 1981; Rezak et al., 1983 and 1985).

The stipulation establishes No Activity Zones (NAZ) at the topographic features. A zone is defined by the 85-meter isobath because, generally, the biota shallower than 85 m are more typical of the Caribbean reef biota, while the biota deeper than 85 m are similar to soft-bottom organisms found throughout the Gulf. Where a bank is in water depths less than 85 m, the deepest closing isobath defines the NAZ for that bank. Within the NAZ, no operations, anchoring, or structures are allowed. Outside the NAZ, additional restrictive zones are established within which oil and gas operations could occur, but within which drilling discharges would be shunted.

The stipulation requires that all effluents within 1,000 m of banks containing an antipatharian-transitional zone be shunted to within 10 m of the seafloor. Banks containing the more sensitive and productive algal-sponge zone require a shunt zone extending 1 nautical mile (nmi) for development and exploratory operations and an additional 3-nmi shunt zone for development operations only.

Exceptions to this general stipulation scheme are made for the Flower Garden Banks, Stetson Bank and the low-relief banks. Because they have received National Marine Sanctuary status, the Flower Garden Banks are protected to a greater degree than the other banks. The added provisions at the Flower Garden Banks require that (a) the NAZ be based on the 100 m isobath instead of the 85 m isobath and be defined by the "1/4-1/4-1/4" system (a method of defining a specific portion of a block) rather than the actual isobath and (b) there be a 4-nmi zone instead of a 1-nmi zone in which shunting is required. Although Stetson Bank was made a part of the Flower Garden Banks National Marine Sanctuary in 1996 by an act of Congress, it has not yet received the National Marine Sanctuary added protection that would differ from current stipulation requirements. Low-relief banks have only a NAZ. A shunting requirement would be counterproductive as it would put the potentially toxic drilling muds in the same water depth range as the bank biota that are being protected. Also, the turbidity potentially caused by the release of drilling effluents in the upper part of the water column would not affect the biota on low-relief banks as they appear to be adapted to high turbidity. However, Claypile Bank, which is a low-relief bank that exhibits the Millepora-sponge community, has been given the higher priority protection of a 1,000-Meter Zone within which monitoring is required.

The stipulation reads as follows:

Topographic Features Stipulation
(Western and Central Planning Areas)

(a) No activity including structures, drilling rigs, pipelines, or anchoring will be allowed within the listed isobath ("No Activity Zone") of the banks as listed below.*(See p.9 for a listing of the banks).*

(b) Operations within the area shown as "1,000-Meter Zone" shall be restricted by shunting all drill cuttings and drilling fluids to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom.

(c) Operations within the area shown as "1-Mile Zone" shall be restricted by shunting all drill cuttings and drilling fluids to the bottom through a downpipe that terminates an appropriate distance, but no more than 10-meters, from the bottom. (Where there is a "1-Mile Zone" designated, the "1,000-Meter Zone" in paragraph (b) is not designated.) This restriction on operations also applies to areas

surrounding the Flower Garden Banks National Marine Sanctuary, namely the "4-Mile Zone surrounding the East and West Flower Garden Banks.

(d) Operations within the area shown as "3-Mile Zone" shall be restricted by shunting all drill cuttings and drilling fluids from development operations to the bottom through a downpipe that terminates an appropriate distance, but no more than 10 meters, from the bottom.

Protected Resources

For every Draft EIS for oil and gas lease sales, MMS has requested a biological opinion from NMFS. Pursuant to Section 7 of the Endangered Species Act (ESA), NMFS biological opinions were issued for Central Planning Area Gulf of Mexico Lease Sales 169, 172, 175, 178, and 182 (November 1997), and Western Planning Area Gulf of Mexico Lease Sales 171, 174, 177, and 180 (May 1998). The full text of NMFS biological opinion letters are found at MMS (1997, 1998) and are not repeated here.

From MMS (1998), part of the NMFS biological opinion letter states: "Based on our review of the best available information, we conclude that the proposed multi-year lease sales and associated activities including oil and gas exploration, development, production and non-explosive abandonment may adversely affect but are not likely to jeopardize the continued existence of listed species, including sperm whales, sea turtles and Gulf sturgeon. (The use of explosives to remove oil and gas structures in the Gulf of Mexico is being considered under a separate and ongoing consultation.) Minerals Management Service (MMS), under the authority and responsibility assigned to them by the Outer Continental Shelf Lands Act and the Oil Pollution Act, has implemented measures that appear to be effectively reducing the likelihood of direct impacts of oil and gas activities on the environment. Despite these precautions, the proposed actions may result in the injury or mortality of loggerhead, Kemp's ridley, green, hawksbill, and leatherback sea turtles and Gulf sturgeon. Therefore, pursuant to Section 7(b)(4) of the ESA, a low-level of incidental take that may occur annually is identified in the incidental take statement attached to the enclosed biological opinion. The incidental take level and associated requirements identified to monitor and minimize effects associated with oil and gas exploration, development, and production were discussed with MMS staff. Because immediate action may be necessary to fulfill the condition, I would like to bring to your attention the requirement that surveys be continued to monitor the effects of OCS activities on protected species through continuation of GulfCet surveys or through participation with NMFS in ongoing spring and fall plankton surveys."

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